

10.

Report of the Hospital and Laboratory of the New York
Zoological Park, 1938. Mortality Statistics
of the Society's Collection.

C. R. SCHROEDER
Veterinarian

This and the following 13 papers, numbers 10 to 23 inclusive, form the bulk of the report of the Hospital and Laboratory of the New York Zoological Park for 1938. A few papers were received too late for inclusion in Part 3 of *Zoologica* and will be published in Part 4.

This particular paper is a résumé of the causes of death in the collection and employs the titles of the International Classification of Causes of Death (human) adopted by an international commission in 1929. Necessarily some of the titles have been modified to include specific animal diseases not encountered in human medicine and to exclude certain diseases of humans to which animal populations have native immunity. It has been suggested that joint causes of death be used, and this practice is attempted here with precedence given to those conditions which we believe were primary.

In the (unfortunately) rare instances in which mortality statistics of zoological gardens have been reported in the past, stress has often been laid upon percentages of mortality. This device has been eliminated from the present report because it is believed that percentages are all too likely to give a false interpretation of the actual state of the collection. Animals in zoological gardens fall into two main groups: the immature (juvenile or pre-adult), and mature (adult). Finer distinctions may sometimes be made, particularly in the Mammalia, but even here accuracy is frequently problematical unless ages are positively known, as when an animal has been born in captivity. Consequently we may find that we have a community populated with individuals the majority of which have reached the upper limit of life expectancy—with the result that in any one year the mortality percentage may rise abruptly with no real cause other than a shift in the average age of the exhibits.

At this stage of zoological knowledge, no reliable criterion is available for age determination in birds and reptiles, and they are therefore listed here simply as immature or adult. Mammals have been classified as immature or pre-adult, adult and post-adult or senile, except where specific ages are known. Longevity records of exhibition life are, of course, available, but the age of newly acquired specimens is seldom accurately known.

To prevent the complication of this table beyond easy interpretation, we have not divided the exhibits into groups below Orders. The table will be found to state the postmortem reference number as carried in the records of the Hospital and Laboratory of the New York Zoological Park. Preceding the table is presented a list of specimens in numerical sequence, grouped by Classes, which will identify each by common and scientific name.

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Anyone interested in specific postmortem reports may apply directly to the Hospital and Laboratory, citing the postmortem reference numbers.

For example, the first item in the table lists, under selected causes of death, No. 1, typhoid, one immature member of the Squamata, R-26-38. R refers to reptiles; 26 is the 26th postmortem conducted on a reptile; 38 refers to the year 1938. Our reference list identifies the specimen as a South American boa, *Constrictor c. constrictor*. Our laboratory record cites the organism recovered, together with sugar reactions and final serologic identification, 4 plus agglutination against a specific *Eberthella typhosa* anti-serum, in a dilution of 1:640.

To take another example, the adult member of the Carnivora M-155-38, listed under selected causes as 46F, cancer of the pancreas. The reference list preceding the table reports M-155-38 as a Kadiak bear, *Ursus middendorffii*. In this instance a report is currently published, as paper number 11 in this series.

Where especially interesting cases were studied in detail, either by members of the staff or specialists, reports are published in this and other journals. For the greater mass of material, however, it seemed more advantageous to give a titled summary as in the table that follows, with reference numbers that would enable anyone interested to obtain full information by applying to the laboratory of the Zoological Park, rather than to attempt here a detailed report that would necessarily be almost interminable.

It remains only to be noted that many specimens in our permanent records originated outside the Zoological Park and are not, therefore, included in this statistical summary, and that not all specimens, in the collections, that died during the year were sent to the laboratory for examination.

SPECIMENS FROM THE COLLECTIONS OF THE NEW YORK ZOOLOGICAL PARK
EXAMINED BY THE LABORATORY IN 1938.

REPTILIA.

Laboratory Number	Common Name	Scientific Name
R- 1-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 2-38	Timber Rattlesnake	<i>Crotalus h. horridus</i>
R- 3-38	Indian Cobra	<i>Naja n. naja</i>
R- 4-38	Central American Iguana	<i>Iguana i. rhinolopha</i>
R- 5-38	Green Tree Boa	<i>Boa canina</i>
R- 6-38	Anaconda	<i>Eunectes murinus</i>
R- 7-38	Water Snake	<i>Natrix s. sipedon</i>
R- 8-38	Green Tree Boa	<i>Boa canina</i>
R- 9-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 10-38	Water Moccasin	<i>Agkistrodon piscivorus</i>
R- 11-38	Yellow Cobra	<i>Naja nivea</i>
R- 12-38	Blood Python	<i>Python curtus</i>
R- 13-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 14-38	Green Tree Boa	<i>Boa canina</i>
R- 15-38	South American Boa	<i>Constrictor c. constrictor</i>
R- 16-38	Anaconda	<i>Eunectes murinus</i>
R- 17-38	Gaboon Viper	<i>Bitis gabonica</i>
R- 19-38	Central American Iguana	<i>Iguana i. rhinolopha</i>
R- 20-38	Green Tree Boa	<i>Boa canina</i>
R- 21-38	Puff Adder	<i>Bitis arietans</i>
R- 22-38	Gaboon Viper	<i>Bitis gabonica</i>
R- 23-38	Indian Python	<i>Python molurus</i>
R- 24-38	Gopher Snake (Indigo)	<i>Drymarchon corais melanurus</i>
R- 25-38	South American Boa	<i>Constrictor c. constrictor</i>
R- 26-38	South American Boa	<i>Constrictor c. constrictor</i>
R- 27-38	South American Boa	<i>Constrictor c. constrictor</i>
R- 28-38	Anaconda	<i>Eunectes murinus</i>
R- 29-38	Green Tree Boa	<i>Boa canina</i>
R- 30-38	Bushmaster	<i>Lachesis muta</i>
R- 31-38	King Snake	<i>Lampropeltis getulus floridana</i>
R- 32-38	Egg-eating Snake	<i>Dipsaspeltis scabra</i>
R- 33-38	Pine Snake	<i>Pituophis m. melanoleucus</i>
R- 34-38	Bandy Bandy (African Coral Snake)	<i>Homorrops lacteus</i>

Laboratory Number	Common Name	Scientific Name
R- 35-38	South American Boa	<i>Constrictor c. constrictor</i>
R- 36-38	European Glass Snake	<i>Ophisaurus apodus</i>
R- 37-38	South American Rat Snake	<i>Spilotes pullatus</i>
R- 38-38	Water Moccasin	<i>Agkistrodon piscivorus</i>
R- 39-38	Ball Python	<i>Python regius</i>
R- 40-38	Green Tree Boa	<i>Boa canina</i>
R- 41-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 42-38	Indian Cobra	<i>Naja n. naja</i>
R- 43-38	Puff Adder	<i>Bitis arietans</i>
R- 44-38	Tegu Lizard	<i>Tupinambis teguixin</i>
R- 45-38	Striped Racer	<i>Masticophis t. taeniatus</i>
R- 46-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 47-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 48-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 49-38	Green Tree Boa	<i>Boa canina</i>
R- 50-38	Yellow Cobra	<i>Naja nivea</i>
R- 51-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 52-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 53-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 54-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 55-38	Green Tree Boa	<i>Boa canina</i>
R- 56-38	Central American Iguana	<i>Iguana i. rhinolopha</i>
R- 57-38	South American Boa	<i>Constrictor c. constrictor</i>
R- 58-38	Semi-annulated Snake	<i>Tarophis semiannulatus</i>
R- 59-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 60-38	Tiger Snake	<i>Notechis scutatus</i>
R- 61-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 62-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 63-38	Tiger Snake	<i>Notechis scutatus</i>
R- 64-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 65-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 66-38	Water Moccasin	<i>Agkistrodon piscivorus</i>
R- 67-38	Prairie Rattlesnake	<i>Crotalus v. viridis</i>
R- 68-38	Rosy Boa	<i>Lichanura r. roseofusca</i>
R- 69-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 70-38	Australian Black Snake	<i>Pseudechis porphyriacus</i>
R- 71-38	South American Rat Snake	<i>Spilotes pullatus</i>
R- 72-38	South American Blowing Snake	Not identified
R- 73-38	Rhinoceros Viper	<i>Bitis nasicornis</i>
R- 74-38	South American Boa	<i>Constrictor c. constrictor</i>
R- 75-38	Water Snake	<i>Natrix sipedon compressicauda</i>
R- 76-38	Gaboon Viper	<i>Bitis gabonica</i>
R- 77-38	Prairie Rattlesnake (Pacific)	<i>Crotalus viridis oregonus</i>
R- 78-38	Water Snake	<i>Natrix s. sipedon</i>
R- 79-38	Florida Gopher Tortoise	<i>Testudo polylephemus</i>
R- 80-38	Large-headed Turtle	<i>Platysternon megacephalum</i>
R- 81-38	Mexican King Snake	<i>Lampropeltis getulus splendida</i>
R- 82-38	Copperhead	<i>Agkistrodon m. mokasen</i>
R- 83-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 84-38	Ball Python	<i>Python regius</i>
R- 85-38	Green Tree Boa	<i>Boa canina</i>
R- 86-38	African Monitor	<i>Varanus niloticus</i>
R- 87-38	Regal Python	<i>Python reticulatus</i>
R- 88-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 89-38	Eastern Diamond-back Rattlesnake	<i>Crotalus adamanteus</i>
R- 90-38	Western Diamond-back Rattlesnake	<i>Crotalus atrox</i>
R- 91-38	South American Boa	<i>Constrictor c. constrictor</i>
R- 92-38	Green Tree Boa	<i>Boa canina</i>
R- 93-38	Green Tree Boa	<i>Boa canina</i>
R- 94-38	Green Tree Boa	<i>Boa canina</i>
R- 95-38	Ringed Boa	<i>Epicrates cenchris</i>
R- 96-38	Green Tree Boa	<i>Boa canina</i>
R- 97-38	Copperhead	<i>Agkistrodon m. mokasen</i>
R- 98-38	Blue-tongued Lizard	<i>Tiliqua scincoides</i>
R- 99-38	Anaconda	<i>Eunectes murinus</i>
R-100-38	Karung (Indian Water Snake)	<i>Acrochordus javanicus</i>
R-101-38	Karung (Indian Water Snake)	<i>Acrochordus javanicus</i>
R-102-38	Prairie Rattlesnake	<i>Crotalus v. viridis</i>
R-103-38	Ball Python	<i>Python regius</i>
R-104-38	South American Boa	<i>Constrictor c. constrictor</i>

AMPHIBIA.

Am-1-38 Bullfrog *Bufo catesbeiana*

Laboratory Number	Common Name	Scientific Name
AVES.		
A- 1-38	Homing Pigeon	<i>Columba livia</i> var.
A- 2-38	Australian Broad-billed Roller	<i>Eurystomus orientalis pacificus</i>
A- 3-38	California Brown Pelican	<i>Pelecanus occidentalis californicus</i>
A- 5-38	Paradise Whydah	<i>Steganura p. paradisea</i>
A- 6-38	Paradise Whydah	<i>Steganura p. paradisea</i>
A- 7-38	Green-winged Trumpeter	<i>Psophia v. viridis</i>
A- 8-38	Hyacinthine Macaw	<i>Anodorhynchus hyacinthinus</i>
A- 9-38	Broad-winged Hawk	<i>Buteo p. platypterus</i>
A- 10-38	Toco Toucan	<i>Ramphastos toco</i>
A- 11-38	Golden Pheasant	<i>Chrysolophus pictus</i>
A- 12-38	White Ibis	<i>Guara alba</i>
A- 13-38	Japanese Blue Rock Thrush	<i>Monticola solitarius philippensis</i>
A- 14-38	Ostrich	<i>Struthio c. camelus</i>
A- 15-38	African Silver Bill	<i>Euodice c. cantans</i>
A- 16-38	White Pheasant	<i>Phasianus c. colchicus</i> \times <i>P. c. torquatus</i>
A- 17-38	California Brown Pelican	<i>Pelecanus occidentalis californicus</i>
A- 18-38	White-shouldered Whydah	<i>Coliuspasser a. albonotatus</i>
A- 19-38	Brazilian Silver-beak Tanager	<i>Ramphocelus b. brasilius</i>
A- 20-38	Cuban Barn Owl	<i>Tyto alba furcata</i>
A- 21-38	Gray-cheasted Bird of Paradise	<i>Paradisaea decora</i>
A- 22-38	European Raven	<i>Corvus corax corax</i>
A- 24-38	Great Horned Owl	<i>Bubo v. virginianus</i>
A- 25-38	Cayenne Wood Rail	<i>Aramides c. cajanea</i>
A- 26-38	Orinoco Goose	<i>Neochen jubata</i>
A- 27-38	Yellowhammer	<i>Emberiza c. citrinella</i>
A- 28-38	Curaçao Crested Quail	<i>Colinus cristatus cristatus</i>
A- 29-38	Costa Rican Green Tanager	<i>Chlorophonia callophrys</i>
A- 30-38	European Curlew	<i>Numenius a. arquata</i>
A- 31-38	Blue-backed Manakin	<i>Chiroxiphia p. pareola</i>
A- 32-38	Pileated Jay	<i>Cyanocorax chrysops chrysops</i>
A- 33-38	Cereopsis Goose	<i>Cereopsis novae-hollandiae</i>
A- 34-38	Canada Goose	<i>Branta c. canadensis</i>
A- 35-38	Black Duck	<i>Anas rubripes tristis</i>
A- 36-38	Count Salvadori's Bird of Paradise	<i>Paradisaea s. salvadorii</i>
A- 37-38	Black Duck	<i>Anas rubripes tristis</i>
A- 39-38	Wattled Ibis	<i>Bostrychia carunculata</i>
A- 40-38	California Brown Pelican	<i>Pelecanus occidentalis californicus</i>
A- 41-38	Japanese Gray Thrush	<i>Turdus cardis</i>
A- 42-38	Eastern Cardinal	<i>Richmondena c. cardinalis</i>
A- 43-38	Citron-crested Cockatoo	<i>Kakatoë citronocristata</i>
A- 44-38	Purple Caribbean Hummingbird	<i>Eulampis jugularis</i>
A- 46-38	Violaceous Jay	<i>Cyanocorax violaceus</i>
A- 48-38	Sydney Waxbill	<i>Aegintha t. temporalis</i>
A- 49-38	Philippine White-eye	<i>Zosterops meyeni</i>
A- 50-38	American Egret	<i>Casmerodius albus egretta</i>
A- 51-38	Superb Bird of Paradise	<i>Lophorina superba latipennis</i>
A- 53-38	Bourke Parakeet	<i>Neopsephotus b. bourkei</i>
A- 54-38	Gould's Yellow-rumped Manakin	<i>Munia flavigrymnna</i>
A- 55-38	Hutchins's Goose	<i>Branta canadensis hutchinsii</i>
A- 56-38	American Brant	<i>Branta bernicla hrota</i>
A- 57-38	Yellow-naped Amazon	<i>Amazona ochrocephala auro-palliata</i>
A- 58-38	Pied Myna	<i>Sturnopastor c. contra</i>
A- 59-38	Gould's Yellow-rumped Manakin	<i>Munia flavigrymnna</i>
A- 60-38	Golden-breasted Cotinga	<i>Euchlornis a. aureopectus</i>
A- 61-38	Iceland Gull	<i>Larus leucopterus</i>
A- 62-38	Blue-bearded Jay	<i>Cyanocorax cyanopogon</i>
A- 63-38	Red-faced Gouldian Finch	<i>Poephila gouldiae</i> var.
A- 64-38	Black-faced Gouldian Finch	<i>Poephila gouldiae</i>
A- 65-38	Cherry Finch	<i>Aidemosyne m. modesta</i>
A- 66-38	Gray-headed Amazon	<i>Amazona farinosa inornata</i>
A- 67-38	Manchurian Crane	<i>Grus japonensis</i>
A- 68-38	West African Crowned Crane	<i>Balearica p. pavonina</i>
A- 69-38	Brush Turkey	<i>Alectura l. lathami</i>
A- 70-38	Orange-cheek Waxbill	<i>Estrilda m. melpoda</i>
A- 71-38	Black-faced Gouldian Finch	<i>Poephila gouldiae</i>
A- 72-38	Short-eared Owl	<i>Asio f. flammeus</i>
A- 73-38	South African Ostrich	<i>Struthio camelus australis</i>
A- 74-38	Red-tailed Finch	<i>Bathilda r. ruficauda</i>
A- 75-38	Black-headed Waxbill	<i>Estrilda a. atricapilla</i>
A- 76-38	Edward's Pheasant	<i>Hierophasis edwardsi</i>
A- 77-38	Guiana Chachalaca	<i>Ortalis m. motmot</i>

Laboratory Number	Common Name	Scientific Name
A- 78-38	Fire-tufted Barbet	<i>Psilopogon pyrolophus</i>
A- 79-38	Indian Peafowl	<i>Pavo cristatus</i>
A- 80-38	Scarlet Ibis	<i>Guara rubra</i>
A- 81-38	Quetzal	<i>Pharomachrus m. mocinno</i>
A- 82-38	Jackdaw	<i>Corvus m. monedula</i>
A- 87-38	Blue-naped Pitta	<i>Pitta nepalensis</i>
A- 88-38	European Kestrel	<i>Falco t. tinnunculus</i>
A- 89-38	Gray Pileated Finch	<i>Coryphospingus pileatus brevicaudus</i>
A- 90-38	Black-tailed Japanese Hawfinch	<i>Eophona migratoria</i>
A- 91-38	Razor-billed Curassow	<i>Mitu mitu</i>
A- 92-38	Swinhoe's Pheasant	<i>Hierophasis swinhonis</i>
A- 93-38	South African Cuckoo Falcon	<i>Aviceda cuculoides verrauxii</i>
A- 98-38	Northern Chachalaca	<i>Ortalis v. vetula</i>
A- 99-38	Ochraceous Woodpecker	<i>Celeus flavescens ochraceus</i>
A-101-38	European Quail	<i>Coturnix c. coturnix</i>
A-103-38	Northern Flicker	<i>Colaptes auratus luteus</i>
A-108-38	Red-faced Gouldian Finch	<i>Poephila gouldiae</i> var.
A-109-38	Cockatoo	<i>Nymphicus hollandicus</i>
A-110-38	White-crowned Glossy Starling	<i>Spreo albicapillus</i>
A-111-38	Magellan Robin	<i>Turdus m. magellanicus</i>
A-115-38	Common Saffron Finch	<i>Sicalis f. flaveola</i>
A-116-38	Java Sparrow	<i>Padda oryzivora</i>
A-117-38	Canada Goose	<i>Branta c. canadensis</i>
A-118-38	Sumatran Ruby-throated Bulbul	<i>Rubigula dispar</i>
A-121-38	European White Stork	<i>Ciconia c. ciconia</i>
A-124-38	Golden-fronted Bulbul	<i>Chloropsis a. aurifrons</i>
A-125-38	California Quail	<i>Lophortyx c. californica</i>
A-126-38	European Starling	<i>Sturnus v. vulgaris</i>
A-127-38	Mourning Dove	<i>Zenaidura macroura carolinensis</i>
A-128-38	Lettered Aracari Toucan	<i>Pteroglossus i. inscriptus</i>
A-131-38	King Bird of Paradise	<i>Cicinnurus r. regius</i>
A-133-38	Belted Kingfisher	<i>Megaceryle a. alcyon</i>
A-134-38	Eastern Screech Owl	<i>Otus asio noaevius</i>
A-136-38	Brazilian Troupial	<i>Icterus j. jamacaii</i>
A-137-38	Panama Wagler's Woodpecker	<i>Centurus rubricapillus wagleri</i>
A-138-38	Galeated Curassow	<i>Pauwi pauxi</i>
A-140-38	European White Stork	<i>Ciconia c. ciconia</i>
A-141-38	Indian Peacock	<i>Pavo cristatus</i>
A-142-38	Luzon Hornbill	<i>Penelopides manillae</i>
A-143-38	South African Gray Hornbill	<i>Lophoceros nasutus ephirhinus</i>
A-144-38	Blue and Yellow Macaw	<i>Ara ararauna</i>
A-145-38	Cordon Bleu	<i>Uraeginthus b. bengalus</i>
A-147-38	Wilson's Thrush	<i>Hylocichla f. fuscinervis</i>
A-149-38	California Brown Pelican	<i>Pelecanus occidentalis californicus</i>
A-150-38	European Curlew	<i>Numenius a. arquata</i>
A-153-38	Grass Parrakeet	<i>Melopsittacus undulatus</i>
A-154-38	Formosan Pheasant	<i>Phasianus colchicus formosanus</i>
A-156-38	Eastern Robin	<i>Turdus m. migratorius</i>
A-157-38	Abyssinian Barbet	<i>Trachyphonus m. margaritatus</i>
A-158-38	Double-crested Cormorant	<i>Phalacrocorax a. auritus</i>
A-159-38	Demoselle Crane	<i>Anthropoides virgo</i>
A-167-38	Mikado Pheasant	<i>Syrmaticus mikado</i>
A-168-38	Gray-winged Trumpeter	<i>Psophia c. crepitans</i>
A-169-38	Blue-fronted Amazon	<i>Amazona a. acstiva</i>
A-170-38	European Partridge	<i>Perdix p. perdix</i>
A-171-38	White-headed Sea Eagle	<i>Haliæetus v. vocifer</i>
A-172-38	White-naped Sparrow	<i>Atlapetes albinucha</i>
A-173-38	Striated Bulbul	<i>Pycnonotus f. finlaysoni</i>
A-174-38	Siskin \times Canary	<i>Spinus spinus \times Serinus canarius</i>
A-175-38	White Ibis	<i>Guara alba</i>
A-176-38	Wattled Ibis	<i>Bostrychia carunculata</i>
A-178-38	Eastern Crow	<i>Corvus b. brachyrhynchos</i>
A-179-38	German Peacock Pheasant	<i>Polyplectron germaini</i>
A-180-38	Mikado Pheasant	<i>Syrmaticus mikado</i>
A-181-38	Gray-backed Bald Myna	<i>Sarcops calvus</i>
A-185-38	Twelve-wired Bird of Paradise	<i>Seleucidess m. melanoleucus</i>
A-188-38	Shell Parrakeet	<i>Melopsittacus undulatus</i>
A-189-38	American Osprey	<i>Pandion haliaetus carolinensis</i>
A-190-38	West African Crowned Crane	<i>Balearica p. pavonina</i>
A-194-38	South African Sheldrake	<i>Casarea cara</i>
A-196-38	Red-shouldered Hawk	<i>Buteo l. lineatus</i>
A-199-38	Kenya Scaly Francolin	<i>Francolinus squamatus maranensis</i>
A-200-38	Australian Maned Goose	<i>Chononetta jubata</i>

Laboratory Number	Common Name	Scientific Name
A-201-38	Carrion Crow	<i>Corvus corone corone</i>
A-203-38	Andean Goose	<i>Chloëphaga melanoptera</i>
A-206-38	Masai Ostrich	<i>Struthio camelus massaicus</i>
A-210-38	Lady Amherst Pheasant \times Golden	<i>Chrysolophus amherstiae \times C. pictus</i>
A-211-38	Princess Stephanie's Bird of Paradise	<i>Astrapia s. stephaniae</i>
A-214-38	Senegal Touraco	<i>Turacus p. persa</i>
A-215-38	Lesser Superb Bird of Paradise	<i>Lophorina superba minor</i>
A-218-38	Herring Gull	<i>Larus argentatus smithsonianus</i>
A-219-38	Salvin Amazon Parrot	<i>Amazona autumnalis salvini</i>
A-221-38	Blyth's Wreath-billed Hornbill	<i>Rhyticeros subruficollis</i>
A-222-38	Blyth's Wreath-billed Hornbill	<i>Rhyticeros subruficollis</i>
A-223-38	Silver-throated Calliste	<i>Calospiza icterocephala</i>

MAMMALIA.

M- 1-38	Polar Bear	<i>Thalarctos maritimus</i>
M- 2-38	African Ground Squirrel	<i>Geosciurus capensis</i>
M- 3-38	Sea Lion	<i>Zalophus californianus</i>
M- 4-38	Beaver	<i>Castor canadensis canadensis</i>
M- 5-38	Opossum	<i>Didelphis v. virginiana</i>
M- 6-38	Nine-banded Armadillo	<i>Dasyurus novemcinctus texanus</i>
M- 7-38	Nine-banded Armadillo	<i>Dasyurus novemcinctus texanus</i>
M- 8-38	Fallow Deer	<i>Dama dama</i>
M- 10-38	Sooty Mangabey	<i>Cercocebus fuliginosus</i>
M- 11-38	Woodward's Kangaroo	<i>Macropus robustus woodwardi</i>
M- 13-38	Llama	<i>Lama glama</i>
M- 14-38	Mandrill	<i>Mandrillus sphinx</i>
M- 16-38	Bighorn Sheep	<i>Ovis c. canadensis</i>
M- 17-38	Raccoon	<i>Procyon l. lotor</i>
M- 18-38	Coyote	<i>Canis latrans</i>
M- 20-38	Puma	<i>Felis cougar</i>
M- 21-38	Mona Monkey	<i>Cercopithecus mona</i>
M- 22-38	Wallaroo	<i>Macropus r. robustus</i>
M- 25-38	Mouflon	<i>Ovis musimon</i>
M- 26-38	Gray Gibbon	<i>Hylobates lar agilis</i>
M- 27-38	Black Gibbon	<i>Hylobates l. lar</i>
M- 28-38	Dromedary	<i>Camelus dromedarius</i>
M- 29-38	Raccoon	<i>Procyon l. lotor</i>
M- 33-38	Elk	<i>Cervus canadensis canadensis</i>
M- 34-38	Woodchuck	<i>Marmota monax monax</i>
M- 36-38	Kob Antelope	<i>Kobus kob leucotis</i>
M- 37-38	Woodchuck (Albino)	<i>Marmota monax monax</i>
M- 38-38	Woodchuck	<i>Marmota monax monax</i>
M- 40-38	Gray Fox	<i>Urocyon c. cinereoargenteus</i>
M- 41-38	Chacma Baboon	<i>Papio porcarius</i>
M- 42-38	Aoudad	<i>Amnotragus lervia</i>
M- 43-38	Aoudad	<i>Amnotragus lervia</i>
M- 44-38	Opossum	<i>Didelphis v. virginiana</i>
M- 46-38	Aoudad	<i>Amnotragus lervia</i>
M- 47-38	Aoudad	<i>Amnotragus lervia</i>
M- 48-38	Murine Opossum	<i>Marmosa murina</i>
M- 49-38	Dingo	<i>Canis dingo</i>
M- 52-38	Genet	<i>Genetta tigrina</i>
M- 55-38	Woolly Monkey	<i>Lagothrix humboldtii</i>
M- 56-38	Coyote	<i>Canis latrans</i>
M- 59-38	Raccoon	<i>Procyon l. lotor</i>
M- 61-38	Wolf	<i>Canis nubilus</i>
M- 62-38	Java Macaque	<i>Macaca irus</i>
M- 64-38	Gray Fox	<i>Urocyon c. cinereoargenteus</i>
M- 66-38	European Wolf	<i>Canis lupus</i>
M- 67-38	African Civet	<i>Civettictis civetta</i>
M- 68-38	Axis Deer	<i>Axis axis</i>
M- 69-38	Black Buck	<i>Antilope cervicapra</i>
M- 70-38	Dybowski Deer	<i>Cervus (Sika) hortulorum</i>
M- 73-38	Striped-tailed Dog	<i>Cerdocyon t. thous</i>
M- 74-38	Hyrax	<i>Procavia capensis</i>
M- 76-38	Opossum	<i>Didelphis v. virginiana</i>
M- 77-38	White-tailed Paradoxure	<i>Paradoxurus jerdoni</i>
M- 78-38	Sable Antelope	<i>Hippotragus niger</i>
M- 79-38	Sooty Mangabey	<i>Cercocebus fuliginosus</i>
M- 80-38	Cotton-Top Marmoset	<i>Oedipomidas geoffroyi</i>
M- 81-38	Japanese Sika Deer	<i>Cervus (Sika) n. nippon</i>
M- 83-18	Himalayan Tahr	<i>Hemitragus jemlahicus</i>

Laboratory Number	Common Name	Scientific Name
M- 84-38	Fallow Deer	<i>Dama dama</i>
M- 85-38	Elk	<i>Cervus canadensis canadensis</i>
M- 86-38	Olive (Rhodesian) Baboon	<i>Papio anubis</i>
M- 87-38	Opossum	<i>Didelphis v. virginiana</i>
M- 88-38	Cotton-Top Marmoset	<i>Oedipomidas geoffroyi</i>
M- 90-38	Woodward's Kangaroo	<i>Macropus robustus woodwardi</i>
M- 92-38	Nine-banded Armadillo	<i>Dasyurus novemcinctus texanus</i>
M- 93-38	American Black Bear	<i>Ursus americanus</i>
M- 95-38	Woodchuck	<i>Marmota monax monax</i>
M- 96-38	Raccoon	<i>Procyon l. lotor</i>
M- 97-38	Great Gray Kangaroo	<i>Macropus g. giganteus</i>
M- 98-38	Rock Wallaby	<i>Macropus brunii</i>
M- 99-38	Mandrill	<i>Mandrillus sphinx</i>
M-100-38	Rock Wallaby	<i>Macropus brunii</i>
M-101-38	Red Fox	<i>Vulpes fulva</i>
M-102-38	Red Fox	<i>Vulpes fulva</i>
M-112-38	Two-Spotted Palm Cat	<i>Nandinia binotata</i>
M-113-38	Kodiak Bear	<i>Ursus middendorffii</i>
M-114-38	Chimpanzee	<i>Pan satyrus</i>
M-116-38	Bay Lynx	<i>Lynx r. rufus</i>
M-117-38	Tayra	<i>Tayra barbara</i>
M-118-38	Golden Agouti	<i>Dasyprocta aguti</i>
M-120-38	Nyala or Harnessed Antelope	<i>Tragelaphus angasi</i>
M-125-38	Himalayan Tahr	<i>Hemitragus jemlahicus</i>
M-126-38	Fallow Deer	<i>Dama dama</i>
M-127-38	Sumichrast's Night-mouse	<i>Nyctomys sumichrasti</i>
M-130-38	Opossum	<i>Didelphis v. virginiana</i>
M-132-38	Opossum	<i>Didelphis v. virginiana</i>
M-135-38	Bushy-tailed Galago	<i>Galago crassicaudatus</i>
M-136-38	Vampire Bat	<i>Desmodus rotundus murinus</i>
M-137-38	Ocelot	<i>Felis pardalis</i>
M-138-38	Hyrax	<i>Procavia capensis</i>
M-143-38	Central American Gray Squirrel	Unidentified
M-144-38	Ocelot	<i>Felis pardalis</i>
M-146-38	Giant Anteater	<i>Myrmecophaga tridactyla</i>
M-150-38	Drill	<i>Mandrillus leucophaeus</i>
M-151-38	Dybowsky Deer	<i>Cervus (Sika) hortulorum</i>
M-155-38	Kodiak Bear	<i>Ursus middendorffii</i>
M-167-38	Rhesus Monkey	<i>Macaca mulatta</i>
M-168-38	Barasingha Deer	<i>Cervus (Rucervus) duvauceli</i>
M-169-38	Red Deer	<i>Cervus elaphus</i>
M-170-38	White-handed Gibbon	<i>Hylobates lar leuciscus</i>
M-171-38	Rock Wallaby	<i>Macropus brunii</i>
M-180-38	Japanese Sika Deer	<i>Cervus (Sika) n. nippon</i>
M-181-38	Raccoon	<i>Procyon l. lotor</i>
M-183-38	Chacma Baboon	<i>Papio porcarius</i>
M-184-38	Pigmy Hippopotamus	<i>Choeropsis liberiensis</i>
M-188-38	Lion	<i>Felis leo</i>
M-189-38	Tanganyika Giraffe	<i>Giraffa camelopardalis tippelskirchi</i>
M-190-38	Canadian Porcupine (Albino)	<i>Erethizon d. dorsatum</i>
M-195-38	Prehensile-tailed Porcupine	<i>Coendou prehensilis</i>
M-196-38	Duiker	<i>Sylvicapra grimmii</i>
M-197-38	Hyrax	<i>Procavia capensis</i>
M-201-38	Porcupine	<i>Erethizon d. dorsatum</i>
M-202-38	Bison	<i>Bison b. bison</i>
M-203-38	Opossum	<i>Didelphis v. virginiana</i>
M-204-38	Mouflon	<i>Ovis musimon</i>
M-208-38	Hyrax	<i>Procavia capensis</i>
M-219-38	Dingo	<i>Canis dingo</i>
M-220-38	Two-spotted Palm Cat	<i>Nandinia binotata</i>
M-221-38	Axis Deer	<i>Axis axis</i>
M-233-38	Raccoon	<i>Procyon l. lotor</i>
M-234-38	Hussar Monkey	<i>Erythrocebus patas</i>
M-239-38	Spider Monkey	<i>Ateles cucullatus</i>
M-247-38	Opossum	<i>Didelphis v. virginiana</i>
M-249-38	Ocelot	<i>Felis pardalis</i>
M-250-38	Prehensile-tailed Porcupine	<i>Coendou prehensilis</i>
M-264-38	Woolly Monkey	<i>Lagothrix infumatus</i>
M-265-38	Eland	<i>Taurotragus o. oryx</i>
M-266-38	Dingo	<i>Canis dingo</i>
M-267-38	Barasingha Deer	<i>Cervus (Rucervus) duvauceli</i>
M-268-38	Himalayan Tahr	<i>Hemitragus jemlahicus</i>

Deaths by Orders and age groups, with causes.
(For identification of postmortem numbers, see list preceding table).

Class	Reptilia ¹		Aves		Mammalia		
	Total Deaths ²	550	43.2%	301	15.4%	128	25.3%
Selected Causes ³	Imm.	Adult	Orders and Postmortem Reference Number	Imm.	Adult	Pre-adult	Post-adult
International List Number							Orders and Postmortem Reference Number
1	Infectious and parasitic diseases	5	15			4	Total: 66
1	Typhoid	1	Squamata R-26-38	4	23		
2	Diseases due to <i>Salmonella</i> sp.	1	Squamata R-27-38	1	Pelecaniformes A-11-38		
13a	Amebic dysentery	1	Squamata R-52-38 (Helminthiasis)				
23	Tuberculosis of respiratory system	1	Squamata R-44-38				
32	Disseminated tuberculosis	1	Squamata R-64-38	1	Galliformes A-69-38 Gruiformes A-7-38 A-168-38 Psittaciformes A-66-38	1 1 1 1	Rodentia M-34-38 M-37-38 M-38-38 (Scabies)
36	Septicemia—purulent infection	1	Squamata R-19-38 (Trauma) R-22-38 (Drowning)	1	Pelecaniformes A-3-38 Falconiformes A-196-38 Galliformes A-79-38 Piciformes A-99-38 A-103-38 A-157-38	1 1 1 1 1	Marsupialia M-5-38 M-130-38 Primates M-41-38 (Brain abscess) M-80-38

1	R-29-38 (Acariasis)	Passeriformes A-5-38 A-6-38	1	Carnivora M-52-38 M-233-38 (Icterus)
1	R-60-38 (Acariasis)		1	Edentata M-7-38 (Broncho- pneumonia)
1	R-63-38 (Acariasis)		1	Hyracoidea M-74-38 (Enteritis)
1	R-67-38 (Acariasis)		1	
1	R-70-38 (Acariasis)		1	
1	R-88-38 (Stomatitis)		1	
38	Malaria	Squamata R-66-38		
39	Sarcosporidia			
41	Hydatid cysts			
42	Diseases caused by helminths	Squamata R-35-38 R-39-38 R-74-38	1	Primates M-88-38 (Microfilaria)
43	Mycoses			Carnivora M-112-38 M-116-38 Rodentia M-127-38
44	Other infectious and parasitic diseases			Marsupialia M-11-38 (Septicemia) M-22-38 (Trauma)

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1 Including Amphibia.
2 From records of Departments of Reptiles, Birds and Mammals, including many specimens not sent to the Laboratory, or not autopsied, and consequently not incorporated in this table. Percentages in Total Deaths column refer to losses based on total number of specimens in each Department during the year.

Deals comparatively with modifications not incorporated in this table.

International List Number	Class	Reptilia ¹		Aves		Mammalia		Orders and Postmortem Reference Number	
		Total Deaths ²	550	43.2%	301	15.4%	128	25.3%	
Selected Causes ³		Imm.	Adult	Imm.	Adult	Pre-adult	Post-adult		
1	Infectious and parasitic diseases	5	15		4	23	4	15	Total: 66
1	Typhoid	1		Squamata R-26-38					
2	Diseases due to <i>Salmonella</i> sp.	1		Squamata R-27-38	1	Pelecaniformes A-17-38			
13a	Amebic dysentery		1	Squamata R-52-38 (Helminthiasis)					
23	Tuberculosis of respiratory system		1	Squamata R-44-38					
32	Disseminated tuberculosis		1	Squamata R-64-38	1	Galliformes A-69-38 Gruiformes A-7-38 A-168-38 Psittaciformes A-66-38	1	Rodentia M-34-38 M-37-38 M-38-38 (Scabies)	
36	Septicemia—purulent infection		1	Squamata R-19-38 (Trauma) R-22-38 (Drowning)	1	Pelecaniformes A-3-38 Falconiformes A-196-38 Galliformes A-79-38 Piciformes A-99-38 A-102-38 A-157-38	1	Marsupialia M-5-38 M-130-38 Primates M-41-38 (Brain abscess) M-80-38	
			1	R-29-38 (Acariasis) R-60-38 (Acariasis) R-63-38 (Acariasis) R-67-38 (Acariasis) R-70-38 (Acariasis) R-88-38 (Stomatitis)	1	Passeriformes A-5-38 A-6-38 A-63-38 A-64-38 A-65-38 A-89-38 A-124-38 A-126-38	1	Carnivora M-52-38 M-233-38 (Icterus) Edentata M-7-38 (Bronchopneumonia) Hyracoidea M-74-38 (Enteritis)	
38	Malaria		1	Squamata R-66-38					
39	Sarcosporidia						1	Artiodactyla M-169-38	
41	Hydatid cysts						1	Rodentia M-201-38	
42	Diseases caused by helminths	1	1	Squamata R-36-38 R-39-38 R-74-38			1	Primates M-88-38 (Microfilaria) Carnivora M-112-38 M-116-38 Rodentia M-127-38	
43	Mycoses				1	Struthioniformes A-73-38 Gruiformes A-68-38 (Tracheal obstruction)	1	Marsupialia M-11-38 (Septicemia) M-22-38 (Trauma)	
44	Other infectious and parasitic diseases	1	1	Squamata R-28-38 R-37-38 (Ixodiasis) R-96-38 (Acariasis)	1	Anseriformes A-194-38 (Botulism) Galliformes A-189-38 (Pox) Columbiformes A-127-38 (Pigeon pox)			

¹ Including Amphibia.² From records of Departments of Reptiles, Birds and Mammals, including many specimens not sent to the Laboratory, or not autopsied, and consequently not incorporated in this table. Percentages in Total Deaths column refer to losses based on total number of specimens in each Department during the year.³ Based on international list for human deaths and joint causes, with modifications.

Class	Selected Causes	Reptilia		Aves		Mammalia		
		Imm.	Adult	Imm.	Adult	Pre-adult	Post-adult	Orders and Postmortem Reference Number
International List Number	Selected Causes	Imm.	Adult	Imm.	Adult	Pre-adult	Post-adult	Orders and Postmortem Reference Number
44	Other infectious and parasitic diseases (continued)			1				Passeriformes A-13-38 (Tropical fowl mite) A-46-38 (Pediculosis) A-185-38 (Teniasis)
	II Cancers and other tumors				4			Total: 7
46	Cancer and other malignant tumors of digestive tract							Carnivora M-155-38
46f	Pancreas							
48	Cancer of the uterus							1
49	Cancer of genital organs							Artiodactyla M-78-38
49a	Ovary							
53	Cancer of unspecified organs							
53e								
54	Nonmalignant tumors							
54e								
	III Rheumatic, nutritional, endocrin. general							
58	Gout							1
								Total: 3
								Anseriformes A-34-38 (Visceral)



International List Number	Class	Reptilia			Aves			Mammalia				
		Selected Causes	Imm.	Adult	Orders and Postmortem Reference Number	Imm.	Adult	Orders and Postmortem Reference Number	Pre-adult	Adult	Post-adult	Orders and Postmortem Reference Number
44	Other infectious and parasitic diseases (continued)					1		Passeriformes A-13-38 (Tropical fowl mite) A-46-38 (Pediculosis) A-185-38 (Teniasis)				
II	Cancers and other tumors					4				3	Total: 7	
46	Cancer and other malignant tumors of digestive tract									1	Carnivora M-155-38	
46f	Pancreas											
48	Cancer of the uterus									1	Artiodactyla M-78-38	
49	Cancer of genital organs											
49a	Ovary					1		Galliformes A-11-38 A-154-38				
53	Cancer of unspecified organs					1		Galliformes A-16-38 (Melanoma)		1	Carnivora M-61-38 (Thyroid)	
53e												
54	Nonmalignant tumors											
54e	—					1		Charadriiformes A-30-38				
III	Rheumatic, nutritional, endocrinics, general					2				1	Total: 3	
58	Gout					1		Anseriformes A-34-38 (Visceral)				

60	Scurvy					1		Ciconiiformes A-80-38 (Intramuscular hemorrhage)	1		Edentata M-146-38
IV	Diseases of blood and blood-making organs					2			1	1	Total: 4
71	Anemias					1		Anseriformes A-37-38	1		Artiodactyla M-189-38 (Nutritional)
71b	Others					1		Galliformes A-170-38 (Nutritional)		1	M-265-38 (Nutritional)
VI	Diseases of the nervous system					1			1		Total: 2
78	Encephalitis					1		Anseriformes A-33-38	1		Primates M-239-38
VII	Diseases of the circulatory system	3				6			1	3	Total: 15
90	Pericarditis								1		Artiodactyla M-196-38
91	Acute endocarditis					1		Ciconiiformes A-50-38		1	Marsupialia M-203-38 (<i>Salmonella enteriditis</i>)
										1	Artiodactyla M-202-38
93	Diseases of myocardium	1			Squamata R-86-38 (Parasitic)	1		Anseriformes A-26-38 (Aneurism) Psittaciformes A-8-38			
95	Other diseases of heart	1			Squamata R-50-38 R-56-38	1		Passeriformes A-131-38		1	Primates M-150-38 Pinnipedia M-3-38
97	Arteriosclerosis (Atheromatosis)					1		Ciconiiformes A-140-38 Galliformes A-167-38	1		Carnivora M-56-38

International List Number	Class	Reptilia				Aves				Mammalia			
		Selected Causes	Imm.	Adult	Orders and Postmortem Reference Number	Imm.	Adult	Orders and Postmortem Reference Number	Pre-adult	Adult	Post-adult	Orders and Postmortem Reference Number	
VIII	Diseases of respiratory system		16			1	28		7	8		Total: 60	
107	Bronchopneumonia					1		Psittaciformes A-219-38	1			Primates M-55-38 (Septicemia) M-114-38 Carnivora M-113-38 Rodentia M-4-38	
108	Lobar pneumonia								1			Primates M-27-38	
109	Pneumonia (All unspecified)				Squamata R-2-38 R-13-38 R-34-38 R-45-38 R-46-38 R-47-38 R-76-38 R-90-38		1	Ciconiiformes A-12-38 Passeriformes A-70-38 A-172-38 A-181-38		1		Marsupialia M-44-38 M-87-38 Carnivora M-144-38	
111	Congestion, edema, embolism, hemorrhagic infarct, thrombosis				Squamata R-6-38 R-9-38 R-23-38 (Septicemia) R-25-38 (Helminthiasis) R-51-38 R-84-38 R-87-38 (Pericarditis) R-100-38		1	Pelecaniformes A-40-38 Ciconiiformes A-176-38 Anseriformes A-55-38 A-203-38 (Proventriculitis) Falconiformes A-9-38 Galliformes A-28-38 A-91-38			1	Marsupialia M-97-38 (Trichomomiasis) Carnivora M-117-38 Rodentia M-118-38 M-190-38 M-195-38 Hyracoidea M-138-38	
114	Other respiratory diseases							1	A-179-38 (Laryngotracheitis) A-180-38 Gruiformes A-159-38 (Compound fracture) Psittaciformes A-43-38 A-53-38 A-144-38 (Trauma) Passeriformes A-19-38 A-22-38 A-27-38 A-29-38 A-36-38 A-51-38 A-58-38 A-62-38 A-75-38 A-87-38 A-115-38			1	Artiodactyla M-16-38 (Aspiration pn.)
IX	Diseases of the digestive system	4	34			2	22		2	7	1	Total: 72	
115	Diseases of buccal cavity and annexa				Squamata R-40-38 R-42-38 R-43-38 R-55-38 R-59-38 R-62-38 R-102-38		1	Strigiformes A-24-38 (Fox)					
117	Ulcer of stomach and duodenum										1	Hyracoidea M-197-38 M-208-38	
118	Other diseases of stomach					1		Falconiformes A-171-38 Passeriformes A-211-38	1				